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THE PRESENT STATE OF THE ORNIS OF GUADALOUPE ISLAND

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IN the spring of 1906 Mr. W. W. Brown, Jr., accompanied by Mr. H. W. Marsden and Ignacio Oroso, made a collecting trip of two months—May 1 to June 28—in Guadalupe Island, gathering material for the Thayer Museum at Lancaster, Massachusetts.

We had planned to have Mr. Brown arrive in Guadalupe much earlier in the season than he did, but owing to the new marine law by which the Mexican Government prohibits all but vessels flying its own flag from visiting the island, his trip thither was long delayed. There are very few Mexican vessels to be had at any price, and to be on time to keep a prearranged appointment is apparently one of the least of the troubles of a Mexican skipper. When the party arrived at Guadalupe May 1, the breeding season of the rock wren, the kinglet, the house finch and the junco was passed, and the only eggs secured were those of the petrel and the flicker.

Since its ornis was first made known in 1875, through the work done there by Palmer, Guadalupe has many times been visited by good ornithologists, Bryant, Anthony, Streater and Beck all having made collections there. Much has already been published concerning it, probably the best description of the island and account of its birds being that of W. E. Bryant (Bull. Cal. Acad. Science, No. 6, 1887). We, however, feel that, even at the risk of what may seem useless repetition, a short description of the island is necessary, in order to make clear the distribution of the birds found there by Brown and Marsden. Furthermore as this is taken from Brown's carefully prepared notes, without it we could scarcely show the changes that are taking place and the present condition of the biota of the island, facts certainly worth recording, especially when it is generally known with what alarming rapidity the destruction of that highly interesting endemic biota, due to the introduction of goats and cats, is taking place. Already many

plants and three birds are gone and others are reduced to very small numbers, and the whole island seems threatened in the near future with absolute desolation—doomed to become a barren rock.

GUADALOUPE ISLAND

Guadaloupe Island, the northern end of which lies about 160 miles southwest from San Antonio point, Lower California, is about 20 miles long and from 3 to 7 miles wide. It is of volcanic origin, and is traversed throughout its entire length by a chain of mountains, the highest of which is some 4500 feet above sea level. The western and northern sides of this range slope rapidly toward the ocean, ending in many places in high perpendicular cliffs. Toward the south the slope is more gradual and ends less abruptly. The southern part of the island, which is lowest, is rocky and barren, and during May and June, 1906, was a sun-burned waste with hardly a leaf of living verdure.

At the northern end of the island extending along a narrow ridge, and in some places down its perpendicular face is a fast decaying pine wood. No young trees appear anywhere and the old ones are gradually falling, the ground being strewn with decaying trunks. This end of the island is of about 3000 feet altitude. Much of the time it is enveloped in heavy fog, and on such occasions a splendid example of the power in these trees of gathering and condensing moisture is afforded. Under the pines water will be pouring in streamlets from the base of the trunks, while the surrounding open country is hardly wet by the fog. Formerly when the whole northwestern part of the island was covered with a dense pine forest, springs must have been more numerous and conditions very different. Most of the higher parts of the island are open, rocky table land, but near the very highest point, north of Mt. Augusta, is a large cypress wood, occupying an area of nearly three square miles. The eastern edge of this large cypress grove ends abruptly at a ridge below which is another much lower table land. Upon this is a second but very much smaller grove of cypress with several springs and pools of water, more or less alkaline, near by. Here Brown and Marsden made their camp. Among the cypresses of both groves there are numerous dried stumps of some shrub now extinct in Guadaloupe. No young trees could be found in or about the groves, and most of the old trees show the marks of the teeth of goats, and many are dying. Far down the northwestern slope there is a large grove of cabbage palms, and another smaller one near Steamer Point on the west shore. Among the palms are a few fine oaks, from 30 to 65 feet in height, and under a cliff east of the cabins several stunted ones that branch very low down like shrubs.

The juniper is gone; numerous dried stumps told, however, where in the past a grove of this tree had stood.

The vegetation of the island in May and June consisted of wild oats, foxtailed grass and cactus plants, and in the region of the old corrals, a species of *Malva* grew in profusion. Other plants, with very few exceptions, were seen only here and there clinging to the almost perpendicular cliffs.

The climate of the island, in spring and early summer at least, is cold and raw with much fog at the northern end. High winds, almost gales, blew from the northwest much of the time, making collecting along the north ridge well nigh impossible. On such days Brown and Marsden would resort to the large cypress grove on the high table land and once inside this wood no matter how hard it blew without, not a breath would be stirring, so perfect is the protection afforded by the closely growing cypress trees.

The domestic goat and cat turned loose upon the island many years ago, are

of course responsible for the destruction of its flora and ornithology. Brown and Marsden estimated the numbers of the goat to be between six and eight thousand. It eats up every growing thing. All shrubs have long been exterminated and not a young tree, palm, oak, pine or cypress can be found in the island. The cat is also very numerous and undoubtedly has caused the extinction of two of the island's native birds—the towhee and the Guadalupe wren—while the rock wren, junco, flicker and petrel, suffer much from its depredations. The house mouse (*Mus musculus*) has become established in Guadalupe and is exceedingly abundant, but it probably does but little harm, while it undoubtedly furnishes the main diet of the burrowing owl and sparrow hawk.

Guadalupe is at present uninhabited by man.

LIST OF BIRDS SEEN OR TAKEN BY BROWN AND MARSDEN

Diomedea nigripes Aud. Seven specimens, adults of both sexes, were taken at sea near the island, on June 27 and 28.

Puffinus opisthomelas Coues. Three specimens were taken in June. Mr. Brown says of this shearwater—"this species was abundant at night about the perpendicular cliffs east of our cabins, on the lower tableland, their cries resounding throughout the night. At day they frequented the waters off the extreme northern end of the island. From the high cliffs they could be constantly seen skimming over the ocean 1,000 feet below; often there were from forty to fifty in sight at one time.

"Along the top of the bluffs we found the remains of three or four that had been killed by cats. The bird almost certainly breeds in the rocky crevices of the bluffs, but we could not prove this, as the perpendicular cliffs are inaccessible.

"On our return trip from Guadalupe shearwaters of this species were constantly in sight. Off the bar at San Quintin there were thousands upon thousands of them—I think I never before have seen so many birds at one time."

Puffinus griseus (Gmel.). Two specimens were taken at sea near Guadalupe in June.

Oceanodroma macrodactyla Bryant. A series of a dozen adults and three young in the down was taken between the dates of May 28 and June 17, and one egg May 28.

Mr. Brown's notes on this species are as follows: "This species was abundant at night about its nesting burrows on the pine ridge at the northern end of the island. Most of the burrows that we opened were empty, the breeding season being about over; three, however, contained one young one each, and one, one egg.

"The burrows were of various lengths and usually led between or under heavy fragments of rock, making it very difficult, in many cases impossible, to reach the end. We found no adult birds in the burrows. After the young are hatched the old birds appear to come in only at night to feed them. The one egg we secured was in a deserted burrow fifteen inches long, and lay in a somewhat enlarged depression at the end. It was white with a faint wreath of reddish brown specks at the larger end.

"The mortality among these birds from the depredations of the cats that overrun the island is appalling—wings and feathers lie scattered in every direction around the burrows along the top of the pine ridge. The species, however, is still breeding in large numbers in Guadalupe, and sometimes at night the air seemed to be fairly alive with petrels, their peculiar cries being heard on all sides."

Phalacrocorax sp. "Two cormorants were several times seen off the southern

end of the island. They were very shy and we were unable to secure either of them."

Buteo broealis calurus (Cass.). Three fine specimens taken by Brown and Marsden prove that the red-tailed hawk of Guadaloupe is true *B. borealis calurus*.

Mr. Brown says of it: "A few pairs frequented the high pine woods of the north ridge. Although we searched very carefully we found no nests either in the pines or the cypresses and I think they must breed along the precipices."

Cerchneis sparveria phalœna (Lesson). Fourteen skins, young and adults, May 13 to June 19. These do not differ from specimens from northern California and elsewhere on the mainland within the range of the subspecies.

Mr. Brown writes that the sparrow hawk is "tolerably common in Guadaloupe and very shy. Its food consists chiefly of mice (*Mus musculus*) but it also catches and eats house finches, juncos and rock wrens. They nest along the cliffs. Young fully able to fly were about by June 10."

Heteractitis incanus (Gmel.). One male, in unspotted plumage, was taken May 5. It was alone on the beach near the landing, feeding among the rocks almost in the surf.

Crymophilus fulcarius (Linn.). One female, taken June 27. This is a late date upon which to find the red phalarope so far south, and the bird was probably a stray.

Larus occidentalis Aud. One adult female, taken May 4. Mr. Brown says "a flock of about ten individuals lived on and about the beach near the landing, and others were seen at the southern end of the island. I think they nest on the shelves of the perpendicular cliffs."

Ptychoramphus aleuticus (Pall.). One female was taken June 28. Mr. Brown's notes say of this species: "A few were constantly seen at sea off the southern end of the island, and on shore we found a number of dead ones rolled up above the surf."

Micruria hypoleuca (Xantus). Two females were taken at sea off Guadaloupe June 27. One of these was moulting its primaries and was unable to fly.

Speotyto cunicularia hypogæa (Bp.). *Speotyto cunicularia becki* Rothschild and Hartert, Novit. Zool., Vol. IX, p. 405, July 1902: Guadaloupe Island.

Twenty-seven specimens, young and adults, May 6 to June 17.

The burrowing owl of Guadaloupe is absolutely indistinguishable in any way from the subspecies *hypogæa* of the mainland. Mr. E. W. Nelson also reached this conclusion several years ago, when he compared with mainland specimens, the large series from Guadaloupe then in the collection of the California Academy of Sciences.

Mr. Brown's notes on the burrowing owl are as follows: "Very common in the high, open, rocky country of the tablelands, but not found in the pine or cypress woods. It is mostly nocturnal in its habits, though several times I saw it hunting grasshoppers during the day. We found several nests in holes among the rocks, all containing young nearly full grown. One nest in which there were five young birds, contained, besides, eighteen freshly killed mice and the remains of many others. While mice seem to be its chief diet, I found in the stomachs of some of the ones I skinned remains of beetles and grasshoppers. Its cry, which is not unpleasant, is always to be heard on dark nights mingled with the voices of petrels and shearwaters."

Colaptes rufipileus Ridg. A series of skins was secured on dates ranging from May 6 to June 19, and six sets of eggs May 8 to June 8.

This well-marked island form is in all probability doomed to speedy extinction,

and will be the next of the Guadeloupe birds to go. Brown and Marsden found in all not more than forty individuals in the island. In the small cypress grove near the cabins there were four and in the large cypress woods about thirty-five.

Mr. Brown tells us that in the breeding season, at least, the species is wholly confined to the cypresses, none being seen in the pine woods. The bird is very tame and unsuspicious and falls an easy prey to the cats.

The six sets of eggs taken may be described as follows:

Set 1. May 8, 1906. Eggs fresh, in an old cypress stump, 4 feet from ground; altitude 4500 feet.

Set 2. May 18, one egg and three young.

Set 3. May 20, one egg, nest in a dead cypress 10 feet up, hole 18 inches deep, 4 inches wide.

Set 4. May 20. Four eggs, nest in an old cypress 5 feet from ground; altitude 3700 feet.

Set 5. May 24. Four eggs, nest in a cypress four feet from ground, hole 20 inches deep, $3\frac{1}{2}$ inches wide; altitude 4000 feet.

Set 6. June 8. Five eggs, nest in a cypress 15 feet from ground, hole 2 inches deep and 4 inches in diameter.

***Trochilus anna* (Less.)?** Early in June Mr. Brown saw a hummingbird he felt sure belonged to this species. Early one morning after a severe northwest storm that had lasted for several days, the bird flew past him along the edge of the bluffs of the lower tableland and disappeared. It was the only hummingbird seen in the island.

***Regulus calendula obscurus* Ridg.** A good series was secured on dates ranging from May 13 to June 11, most of those taken being males. Mr. Brown found the species restricted to the large cypress wood, and in small numbers, noting in all about thirty-five individuals. The breeding season was passed, as young on the wing were seen. The males, however, were still singing, and Mr. Brown characterizes the song as "indescribably sweet; in fact I have seldom heard its equal, and given as it always is in the silent gloomy depths of the cypress woods of Guadeloupe, it is ever to be remembered."

***Salpinctes obsoletus guadeloupensis* Ridg.** A large series was secured, on dates from May 1 to June 8.

Next to the house finch, the rock wren is the commonest bird of Guadeloupe, and occurs all over the island from sea level to the highest peaks and in every kind of country, from the rocky beach, the cliffs, and the grassy plateau to the high wooded region. It is very tame and confiding, and Mr. Brown has several times, when standing or sitting still, had one hop onto his shoe or even upon his knee and look him over with evident curiosity.

Nests found as early as May 8 contained young. In the open country the nest is placed in crevices in the rocks and in the cypress woods in hollows in the decaying, prostrate cypress trees.

***Sitta canadensis* Linn.** A suite of skins taken from May 13 to June 11, shows the resident breeding nuthatch of Guadeloupe to be quite the same as the bird of continental North America generally.

It is very local in Guadeloupe being confined to the pine woods of the north ridge. Mr. Brown thought about fifty individuals made their home in this desolate, wind-swept wood that is about 3000 feet above the sea and is almost constantly buried in fog. It was never seen in the cypresses or the palm woods. All the specimens taken were adult and no sign of nesting was observed.

***Carpodacus amplus* Ridg.** A large series of specimens, including young and

adults, taken from May 1 to June 18. Many adult males in this series are in the yellow phase of plumage.

The house finch is by far the commonest bird of the island. Mr. Brown has sent us the following account of it: "On our arrival—May 1—well grown young were about with the old birds, and at that time the house finches were scattered about in large numbers all over the island. On the cliffs and about the rocks near the landing there were several hundred of them. Late in June they gathered in flocks and all left the lower altitudes, even those, some thirty or forty, that had been living about our cabins. Empty nests were found in a variety of situations, in the pines and cypresses, in cactus plants, and in crevices in the rocks. Their food seemed to consist chiefly of grass seeds and insects, but the birds that lived near our cabins were very partial to goat meat and made our meat-shed their headquarters."

Junco insularis Ridg. A large series, including young and adults, was taken from May 4 to June 18.

The Guadeloupe junco, a very tame, confiding little bird, is fairly abundant throughout the island, though more numerous at high altitudes—in the cypress groves, the pine woods and among the oaks. A few, however, breed down even to sea level. One pair was feeding its young among the rocks on the beach at the landing.

At the time of Mr. Brown's arrival—May 1—full grown young were about. One nest only in which there were still young birds, four in number, was found. This was placed on a lower branch of a pine, was bulky and made mostly of dried grass stems.

BIRDS PROBABLY NOW EXTINCT

Polyborus lutosus Ridg. When Beck visited Guadeloupe in 1900-1901 the Caracara still occurred in the island, though probably in small numbers. It appears now to be entirely extinct. During two months spent in Guadeloupe by Brown and Marsden the island was ransacked from end to end, but no trace of the caracara could be found.

Goats were killed and left at various points on the island, especially upon the high, open tableland, where the caracaras, had there been any, must have detected them, but nothing came to any of the many carcasses that were thus exposed.

Thryomanes brevicaudus Ridg. Writing in *THE CONDOR* in May, 1901, A. W. Anthony gave it as his opinion that the Guadeloupe wren was extinct. It undoubtedly is, Brown and Marsden hunting in vain every spot where it might possibly have survived.

Pipilo consobrinus Ridg. In the same article in which Anthony refers to the Guadeloupe wren as "among those that were", he mentions the towhee, saying that it is "now nearly or quite extinct." Unfortunately there can no longer be any doubt of the complete extermination of this strongly characterized island species. If there had been a living individual, we feel sure it could not have escaped the close scrutiny of two such experienced field collectors as Brown and Marsden, who searched the whole island for two months, the towhee being one of the birds they especially sought.

Boston, Massachusetts.